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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,625	04/22/2004	John William Alcorn	ROC920030352US1	7294
7590 Robert R. Williams IBM Corporation Dept. 917 3605 Highway 52 North Rochester, MN 55901-7829				
EXAMINER				
CHEN, QING				
ART UNIT		PAPER NUMBER		
2191				
MAIL DATE		DELIVERY MODE		
10/27/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/829,625

Applicant(s)

ALCORN ET AL.

Examiner

Qing Chen

Art Unit

2191

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

1. This Office action is in response to the amendment filed on July 9, 2008.
2. **Claims 1-3** are pending.
3. **Claims 1 and 2** have been amended.
4. **Claims 4-20** have been cancelled.

Response to Amendment

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claim 1** is rejected under 35 U.S.C. 103(a) as being unpatentable over US **6,889,227** (hereinafter "**Hamilton**") in view of US **6,748,373** (hereinafter "**Messinger**") and US **5,899,990** (hereinafter "**Maritzen**").

As per **Claim 1**, Hamilton discloses:

- receiving a specification of a method in a container-managed persistence entity bean and a procedure in a backend data store (see Column 4: 6-10, "The application server receives the database protocol commands or queries from the client computer system and a database bridge converts the database protocol commands to general computer programming language

commands of applications running on the application server.” and 33-46, “... when the client computer system attempts to access a database field, the request from the client is executed against the created map to determine the corresponding EJB command (e.g. method) for accessing the database field. The EJB command is invoked at the application server and performs the desired operation on the database field desired by the client computer system.”;
Column 6: 22-27, “After the SQL protocol commands are mapped to EJB objects 130, the objects are executed and the EJB objects 130 develop and send queries to the database 110 server 20. A database interface 140 processes the SQL query and accesses the database 150.”);

- in response to the receiving, generating code in a helper class associated with the container-managed persistence entity bean, wherein the helper class determines a connector based on a connection factory type (see Column 6: 14-25, “The database bridge 120 may be defined as a “bridge” class to implement its database protocol command conversion functions.” and “The SQL bridge 120 contains a database bridge map 128 that has methods for mapping commands between the client application 104 and EJB objects. After the SQL protocol commands are mapped to EJB objects 130, the objects are executed and the EJB objects 130 develop and send queries to the database 110 server 20.”; Column 8: 49-53, “After operations defined by EJB logic has been completed at the application server 18, the database is accessed from the application server 18 with a database protocol language corresponding to the database access request from the client computer system (step 632).”);

- accessing the procedure in the backend data store via a backend-specific protocol and the connector, wherein the accessing the procedure in the backend data store further comprises invoking the procedure in the backend data store, wherein the code in the helper class performs

the accessing and the invoking (see Column 4: 51-56, "The client computer systems 14 communicate in a database access protocol, such as SQL, to the application server 18 ...";

Column 6: 1-9, "OLE-DB is a Microsoft COM API for database access. The Microsoft OLE-DB interface uses database drivers to talk to target databases." and 14-25, "After the SQL protocol commands are mapped to EJB objects 130, the objects are executed and the EJB objects 130 develop and send queries to the database 110 server 20.");

- receiving a specification of input and output records for the procedure in the backend data store (see Column 7: 28-31, "The SQL commands, as represented in the table, specify a table, T, row, R, column, C, or universal character, such as "*", that is used for requesting multiple elements in a single command."); and

- mapping the input and output records between the method in the container-managed persistence entity bean and the procedure in the backend data store, wherein the output records comprise the results, and wherein a state of the container-managed persistence entity bean persists beyond a lifetime of an application that uses the container-managed persistence entity bean (see Figure 4; Column 7: 20-28, "The database bridge map 128 maps EJB methods and properties, used to invoke a designated function in the database, to the SQL commands that perform the functions and to the database elements that are the target of the function. Thus, when the application server 18 receives an SQL command from the client computer system 14, the SQL command is matched to an EJB method that when executed performs the desired operation on the appropriate database element." and 31-62, "For example, if a client computer system initiated, from Visual Basic, a "select FirstName" command that command would be converted to an SQL command, such as SQL command 402. The SQL command 402, for

example, is a database read command that reads table 1, row 1, column 1. The SQL command 402 is mapped to a "getFirstName" method of a corresponding EJB and the "getFirstName" method is executed at the application server 18.").

However, Hamilton does not disclose:

- wherein a container generates access calls to the backend data store, and wherein the container-managed persistence entity bean does not include the calls to the backend data store, wherein the container marks transaction boundaries, wherein the container includes the container-managed persistence entity bean, and wherein the receiving further comprises receiving the specification of the method and the procedure from a deployer;
- wherein the deployer supplies the connection factory type; and
- wherein the code in the helper class calls an evaluator class and passes results of the procedure, wherein the evaluator class evaluates the results.

Messinger discloses:

- wherein a container generates access calls to the backend data store, and wherein the container-managed persistence entity bean does not include the calls to the backend data store, wherein the container marks transaction boundaries, wherein the container includes the container-managed persistence entity bean, and wherein the receiving further comprises receiving the specification of the method and the procedure from a deployer (*see Column 1: 41-65, "A typical Java 2 Enterprise Edition (J2EE) platform includes one or more containers. A container is a runtime used to manage application components and provide access to J2EE application programming interfaces (APIs). An EJB container typically hosts Enterprise JavaBean components, such as entity beans or session beans."* and "A Java Database

Connectivity (JDBC) API can provide a developer with the ability to connect to a relational database system. The API can allow transactional querying, retrieval, and manipulation from a JDBC-compliant database.” and “The EJB 2.0 specification, set forth by Sun Microsystems, Inc., of Santa Clara, Calif., defines a mechanism known as container managed persistence (CMP) by which the EJB implementation maps data in an DBMS to entity beans. This mapping includes both mapping to values in a DBMS and mapping of relations between entities in the DBMS.”; Column 3: 13-16, “Through tuning field groups carefully, EJB application deployers can reduce the traffic, both volume of data and number of round trips, to and from a database, thereby increasing performance.” and 46-49, “This control can be accomplished, for example, by allowing an EJB deployer to specify which mapped data should be loaded aggressively and which should be faulted in as needed.”); and

- wherein the deployer supplies the connection factory type (see Column 3: 13-16, “Through tuning field groups carefully, EJB application deployers can reduce the traffic, both volume of data and number of round trips, to and from a database, thereby increasing performance.” and 46-49, “This control can be accomplished, for example, by allowing an EJB deployer to specify which mapped data should be loaded aggressively and which should be faulted in as needed.”).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Messenger into the teaching of Hamilton to include wherein a container generates access calls to the backend data store, and wherein the container-managed persistence entity bean does not include the calls to the backend data store, wherein the container marks transaction boundaries, wherein the container includes the

container-managed persistence entity bean, and wherein the receiving further comprises receiving the specification of the method and the procedure from a deployer; and wherein the deployer supplies the connection factory type. The modification would be obvious because one of ordinary skill in the art would be motivated to utilize a runtime environment to manage application components and provide access to J2EE application programming interfaces (APIs) (see Messinger – Column 1: 41-65).

Maritzen discloses:

- wherein the code in the helper class calls an evaluator class and passes results of the procedure, wherein the evaluator class evaluates the results (see Column 9: 6-16, “The run() method 310 submits the SQL query to the selected method in step 434.” and “The selected method formats the retrieved columns 440 in accordance with a designation of the received SQL query and stores the retrieved columns in the form of a String.”).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Maritzen into the teaching of Hamilton to include wherein the code in the helper class calls an evaluator class and passes results of the procedure, wherein the evaluator class evaluates the results. The modification would be obvious because one of ordinary skill in the art would be motivated to format the database information in accordance with the client’s request (see Maritzen – Column 9: 6-16).

7. **Claims 2 and 3** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hamilton** in view of **Messinger** and **Maritzen** as applied to Claim 1 above, and further in view of US 6,269,373 (hereinafter “**Apte**”).

As per **Claim 2**, the rejection of **Claim 1** is incorporated; and Hamilton further discloses:

- wherein the backend data store comprises a relational database (*see Column 6: 27-31, "The data of an SQL database is relational. That is, the database stores information in a table or relation format. A table has a set of rows and columns with columns defining fields in a row, and rows defining a collection of fields that represents one instance or record of data."*).

However, Hamilton, Messinger, and Maritzen do not disclose:

- wherein an instance of the container-managed persistence entity bean corresponds to a row in a table of the relational database.

Apte discloses:

- wherein an instance of the container-managed persistence entity bean corresponds to a row in a table of the relational database (*see Column 16: 57-61, "For example, a container implemented on top of an RDBMS may manage persistence by storing each bean's data as a row in a table."*).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Apte into the teaching of Hamilton to include wherein an instance of the container-managed persistence entity bean corresponds to a row in a table of the relational database. The modification would be obvious because one of ordinary skill in the art would be motivated to maintain entity bean data (*see Apte – Column 16: 57-61*).

As per **Claim 3**, the rejection of **Claim 1** is incorporated; however, Hamilton, Messinger, and Maritzen do not disclose:

- wherein the backend data store comprises a non-relational database.

Apte discloses:

- wherein the backend data store comprises a non-relational database (*see Column 6: 54-57, "The above mentioned methods could be written to access other backend systems (i.e. CICS, IMS, MQ, SAP, etc.) and should not be restricted to just JDBC or database access."*).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Apte into the teaching of Hamilton to include wherein the backend data store comprises a non-relational database. The modification would be obvious because one of ordinary skill in the art would be motivated to utilize and access non-relational databases (*see Apte – Column 6: 54-57*).

Response to Arguments

8. Applicant's arguments with respect to Claim 1 have been considered but are moot in view of the new ground(s) of rejection.

In the Remarks, Applicant argues:

- a) Claim 1 recites: "receiving a specification of a method in a container-managed persistence entity bean and a procedure in a backend data store," which is not taught or suggested by Hamilton and Maritzen for the reasons argued below.

In contrast to claim 1, Hamilton at column 4, lines 6-14 describes that Hamilton "receives the database protocol commands or queries from the client computer system," converts "the database protocol commands to general computer programming language commands of

applications running on the application server," and executes the "converted protocol commands ... on the application server to access the database." Thus, Hamilton does not teach or suggest "receiving a specification of a method in a container-managed persistence entity bean and a procedure in a backend data store," as recited in claim 1 because Hamilton converts to its "general computer programming language commands" while claim 1 receives "a specification of ... a procedure" from a deployer.

Examiner's response:

a) Examiner disagrees. With respect to the Applicant's assertion that Hamilton does not teach nor suggest "receiving a specification of a method in a container-managed persistence entity bean and a procedure in a backend data store," as recited in Claim 1, as previously pointed out in the Non-Final Rejection (mailed on 05/28/2008) and further clarified hereinafter, the Examiner respectfully submits that Hamilton clearly discloses "receiving a specification of a method in a container-managed persistence entity bean and a procedure in a backend data store" (see Column 4: 6-10, "The application server receives the database protocol commands or queries from the client computer system and a database bridge converts the database protocol commands to general computer programming language commands of applications running on the application server." and 33-46, "... when the client computer system attempts to access a database field, the request from the client is executed against the created map to determine the corresponding EJB command (e.g. method) for accessing the database field. The EJB command is invoked at the application server and performs the desired operation on the database field desired by the client computer system."; Column 6: 22-27, "After the SQL protocol commands

are mapped to EJB objects 130, the objects are executed and the EJB objects 130 develop and send queries to the database 110 server 20. A database interface 140 processes the SQL query and accesses the database 150.”). Note that when the client computer system attempts to access a database field, the corresponding EJB method (a specification of a method in a container-managed persistence entity bean) for accessing the database field is determined and invoked at the application server to develop and send SQL queries to the database server. The database interface then processes the SQL query (a specification of a procedure in a backend data store) to access the database.

Therefore, for at least the reason set forth above, the rejection made under 35 U.S.C. § 103(a) with respect to Claim 1 is proper and therefore, maintained.

In the Remarks, Applicant argues:

b) Claim 1 further recites: "in response to the receiving, generating code in a helper class associated with the container-managed persistence entity bean, wherein the helper class determines a connector based on a connection factory type, wherein the deployer supplies the connection factory type; accessing the procedure in the backend data store via a backend-specific protocol and the connector, wherein the accessing the procedure in the backend data store further comprises invoking the procedure in the backend data store, wherein the code in the helper class performs the accessing and the invoking, and wherein the code in the helper class calls an evaluator class and passes results of the procedure," which is not taught or suggested by Hamilton and Maritzen for the reasons argued below.

In contrast to claim 1, Hamilton executes its "converted commands" "on the application server to access the database," as previously argued above, so Hamilton has no purpose or use for a helper class that determines a connector, performs the accessing the procedure in the backend data store and performs the invoking the procedure in the backend data store, as recited in claim 1.

Examiner's response:

b) Examiner disagrees. With respect to the Applicant's assertion that Hamilton has no purpose or use for a helper class that determines a connector, performs the accessing of the procedure in the backend data store and performs the invoking of the procedure in the backend data store, as recited in Claim 1, as previously pointed out in the Non-Final Rejection (mailed on 05/28/2008) and further clarified hereinafter, the Examiner respectfully submits that Hamilton clearly discloses a helper class that determines a connector, performs the accessing of the procedure in the backend data store and performs the invoking of the procedure in the backend data store (see Column 4: 51-56, "The client computer systems 14 communicate in a database access protocol, such as SQL, to the application server 18 ..."; Column 6: 1-9, "OLE-DB is a Microsoft COM API for database access. The Microsoft OLE-DB interface uses database drivers to talk to target databases." and 14-25, "After the SQL protocol commands are mapped to EJB objects 130, the objects are executed and the EJB objects 130 develop and send queries to the database 110 server 20."; Column 6: 14-25, "The database bridge 120 may be defined as a "bridge" class to implement its database protocol command conversion functions." and "The SQL bridge 120 contains a database bridge map 128 that has methods for mapping commands

between the client application 104 and EJB objects. After the SQL protocol commands are mapped to EJB objects 130, the objects are executed and the EJB objects 130 develop and send queries to the database 110 server 20.”; Column 8: 49-53, “After operations defined by EJB logic has been completed at the application server 18, the database is accessed from the application server 18 with a database protocol language corresponding to the database access request from the client computer system (step 632).”). Note that the database bridge contains the SQL query model and the database bridge map. The database bridge (helper class) maps the SQL commands to the EJB objects (generates code associated with the container-managed persistence entity bean). The application server then accesses the database with a database protocol language by executing the EJB objects (helper class determines a connector based on a connection factory type) to develop and send SQL queries to the database server. The database interface then processes the SQL query to access the database (performs the accessing of the procedure in the backend data store and performs the invoking of the procedure in the backend data store). Thus, in effect, the database bridge of the application server is a layer of abstraction between the client application and the database.

Therefore, for at least the reason set forth above, the rejection made under 35 U.S.C. § 103(a) with respect to Claim 1 is proper and therefore, maintained.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Qing Chen whose telephone number is 571-270-1071. The Examiner can normally be reached on Monday through Thursday from 7:30 AM to 4:00 PM. The Examiner can also be reached on alternate Fridays.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Wei Zhen, can be reached on 571-272-3708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Q. C./

Examiner, Art Unit 2191

/Wei Y Zhen/

Supervisory Patent Examiner, Art Unit 2191